MIDDLESEX COUNTY

Cancer Control and Prevention Capacity and Needs Assessment Report Summary

December 2004

Funds and Support Provided By

New Jersey Department of Health and Senior Services
Center for Cancer Initiatives
The Office of Cancer Control and Prevention

Notices:

Medicine is an ever-changing science. As new research and data broaden our knowledge, conclusions may change. The authors and reviewers have endeavored to check the sources of information and to utilize sources believed to be the most reliable in an effort to provide information that is as complete as possible at the time of submission and generally in accord with appropriate standards. However, in view of the possibility of human error or changes in medical science, this work cannot be warranted as being complete and accurate in every respect. Readers are encouraged to confirm the information contained herein with other sources. Information concerning some of the sources of data, rationale for its utilization, acknowledgements of specific parties contributing to these efforts, as well as links to cancer-related information may be found at www.umdnj.edu/evalcweb/.

This county-level Report Summary summarizes the larger county report, which is a baseline evaluation of this county, performed as part of the Capacity and Needs Assessment initiative of the New Jersey Comprehensive Cancer Control Plan (www.state.nj.us/health/ccp/ccc_plan.htm), under the direction of the New Jersey Department of Health and Senior Services (NJDHSS) Office of Cancer Control and Prevention (OCCP) (www.state.nj.us/health/ccp/), the University of Medicine and Dentistry of New Jersey (UMDNJ) (www.umdnj.edu/evalcweb/), and the Evaluation Committee of the Governor's Task Force on Cancer Prevention, Early Detection and Treatment in New Jersey (Task Force Chair: Arnold Baskies, MD; Evaluation Committee Chair: Stanley H. Weiss, MD).

Comments may be sent to the first author of the Report Summary, Ms. Debra A. Levinson at dlevinson@newsolutionsinc.com. ***Copies of any comments should also be sent to both*:** Ms. Knight peg.knight@doh.state.nj.us and Dr. Weiss weiss@umdnj.edu.

Suggested citation for this Report Summary:
Levinson DA. Middlesex County Cancer Capacity and Needs Assessment Report Summary, December 2004. In: *New Jersey Statewide County-based Cancer Capacity and Needs Assessment Initiative, 2003-2004 Report Summaries*, Editors: Stanley H. Weiss (UMDNJ) and Margaret L. Knight (NJDHSS).

Prepared by:

Debra A. Levinson, MPA, FACHE, dlevinson@newsolutionsinc.com
Patricia Virga, PhD
Bongguk Jin, PhD
Lynn M. Schultz, BSN, MBA

On behalf of:

The Middlesex County Public Health Department,
New Brunswick, NJ

Under the guidance of:

Stanley H. Weiss, MD, University of Medicine and Dentistry of New Jersey-New Jersey Medical School (UMDNJ-NJMS) and School of Public Health (UMDNJ-SPH) (Principal Investigator)
Marcia M. Sass, BSRN, MSN, ScD, UMDNJ-SPH
Susan L. Collini, MPH, UMDNJ-NJMS
Daniel M. Rosenblum, PhD, UMDNJ-NJMS
Judith B. Klotz, DrPH, UMDNJ-SPH

With the assistance of:

- The UMDNJ Clinical Research Group – David L. Hom, MS, Loretta L. Morales, MPH, Benita Negron
- The Battelle Centers for Public Health Research and Evaluation – Joanne P. Abed, PhD, Jennifer Brustrom, PhD
- The New Jersey Department of Health and Senior Services: the New Jersey Cancer Education and Early Detection Program, the New Jersey State Cancer Registry, and the Center for Health Statistics.

Reviewed and edited by:

Jung Y. Kim, MPH, UMDNJ-NJMS
Daniel M. Rosenblum, PhD, UMDNJ-NJMS
Stanley H. Weiss, MD, UMDNJ-NJMS and UMDNJ-SPH

List of Contributors:

Nancy J. Erickson	Principal, New Solutions, Inc. (NSI)
Patricia Virga	Director, Consulting Services
Deborah Casarella	Manager of Operations, NSI
Anu Sowrirajan	Information Systems Manager, NSI
Lucy Yongo	Programmer, NSI
Beatrice Cobbold	Data Analyst, NSI
Morane Stewart	Data Analyst, NSI
Judy Ippolito	Executive Assistant, NSI
Carol Ann Donchin	Executive Assistant, NSI
Erick Johansson	Network Administrator, NSI
Lakashia Bullock	Data Analyst, NSI
Matthew Chung	Data Entry Clerk, NSI
Courtney Brown	Data Entry Clerk, NSI
Shakira Smith	Data Entry Clerk, NSI

Table of Contents Page

Middlesex County
Cancer Capacity and Needs Assessment Report Summary

Introduction

The Office of Cancer Control and Prevention (OCCP) of the New Jersey Department of Health and Senior Services (NJDHSS), in conjunction with the mandate from the Governor's Task Force on Cancer Prevention, Early Detection and Treatment in New Jersey (Task Force), is developing comprehensive capacity and needs assessment reports concerning cancer, individualized for each county in the state. This Report Summary highlights key findings in the Middlesex County report.

The Task Force released New Jersey's Comprehensive Cancer Control Plan (NJ-CCCP)[1] in 2002. Each county was commissioned to develop a comprehensive capacity and needs and assessment report, as part of the initial implementation steps for the NJ-CCCP. The full Report and this Report Summary were developed under the direction of the University of Medicine and Dentistry of New Jersey (UMDNJ) and the Evaluation Committee of the Task Force, in furtherance of the NJ-CCCP, which can be found at: http://www.state.nj.us/health/ccp/ccc_plan.htm. This particular assessment was funded by the OCCP through the following New Jersey Cancer Education and Early Detection (NJCEED) county agency in Middlesex County: Middlesex County Public Health Department.

The purpose of the capacity and needs assessment reports is to identify the major cancer issues affecting each county and the county's available resources, or lack thereof, for cancer prevention, screening, and treatment, and to propose recommendations for improvement. The Middlesex County Cancer Capacity and Needs Assessment (C/NA) Report[2] analyzes the population demographics and the cancer incidence and mortality rates and distribution of stage at diagnosis for the seven priority cancers of the NJ-CCCP (breast, cervical, colorectal, lung, oral, melanoma, and prostate), as well as the current resources available, in the county. These data guided the development of evidence-based recommendations and interventions to address cancer control priorities at local and state levels.

Section 1 – County Demographic Profile

According to the U.S. Census, in 2000 Middlesex County's population totaled 750,162 persons, making it the state's third most populated county.[3] The county's culturally diverse population is 68% white, lower than the statewide average (73%).[a] The county's Asian population (104,212 persons) is the largest minority population in the county, primarily Asian Indian (53% of the county's Asian population), and comprises 22% of the state's Asian population. Blacks comprise

[a] In general, percentages in this report are rounded to two digits.

9.1% of the Middlesex County population, compared to 13.6% in the state. Edison Township is home to 27% of the county's Asian population, followed by Woodbridge (13%) and Piscataway Townships (12%). New Brunswick (16% of the county's black population), Piscataway (15%), and Woodbridge (12%) are home to the largest number of black residents in the county. The majority of the county's Hispanic population resides in Perth Amboy (32% of the county's Hispanic population), followed by New Brunswick (19%).[b]

Middlesex County is generally more affluent than the state overall and has a smaller percentage of residents in the lowest income ranges and a larger percentage in the middle- to upper-income ranges. The county's median household income in 1999 was $61,446, 11% higher than the New Jersey median ($55,146).[c] However, poverty exists, predominantly in New Brunswick (11,454 persons, 24% of the county's population with income below the federal poverty level) and Perth Amboy (8,190 persons, 17%).[3]

The educational attainment of Middlesex County adults is similar to educational attainment in the state. The 2000 Census shows that 84% of county residents aged 25 and over have attained a high school diploma or higher, compared to 82% statewide. One-third of Middlesex County residents have a bachelor's degree or higher (30% statewide). However, nearly 16% of Middlesex County residents do not have a high school education (18% statewide). This is particularly true in the disadvantaged cities of Perth Amboy and New Brunswick, where 24% of Perth Amoy residents and 22% of New Brunswick residents aged 25 and older have less than a ninth-grade education.[3]

Additional information regarding health status and related topics is provided in this section of the C/NA. Cancer is the second leading cause of death in both the county and the state.[4] Excessive alcohol usage, measured by admissions to alcohol abuse treatment facilities, is a major risk factor for many cancers. In 2002, Middlesex County resident admissions for alcohol addiction totaled 849 (5.5% of all admissions statewide).[5] Although data on tobacco usage in Middlesex County were not available for this study, key informants[d] stated that smoking, particularly among youth, continues to be a problem.

Section 2 – Overview of Overarching Issues

This section of the report demonstrates that, overall, Middlesex County has available resources, or capacity, for cancer prevention, education, treatment, and support, as well as a wide variety of activities designed to modify behaviors and provide appropriate access to cancer services. This information was included in the statewide Cancer Resource Database of New Jersey (CRDNJ).[6] Over 140 agencies in Middlesex County participated in the 2003–2004 CRDNJ survey.

---

[b] Hispanics and non-Hispanics may be of any race. Racial categories include both Hispanics and non-Hispanics.
[c] All figures for poverty, income, and employment are from the 2000 Census, but refer to the year 1999.
[d] A total of 38 key informants were interviewed for this Capacity and Needs Assessment. The key informants consisted of hospital and oncology program directors and administrators, health educators, nursing directors, outreach coordinators of health or cancer centers, directors of community organizations, social work managers, and education specialists. These key informants represented a broad spectrum of the cancer stakeholders in Middlesex County.

Health planners, providers, and organizations in Middlesex County are very motivated to overcome barriers and increase appropriate access to cancer services. According to key informants, advocacy at the local level is occurring in the following two ways: (1) healthcare providers and community organizations act as patient advocates, working to improve access to early detection and treatment and reduce the burden on patients and their families; and (2) advocacy as systemic change agents, which is often driven by the different agendas of individual providers, resulting in fragmented and sometimes conflicting efforts. Opportunities to improve Middlesex County's general health and cancer educational programs are identified for both professionals and the general public, including the county's youth. County schools currently provide cancer prevention education; however, the majority focus on tobacco, alcohol abuse, and drug use, whereas instruction on breast self-exam, testicular exam, and skin cancer awareness is limited. Key informants indicated that general health education does not adequately teach youth to maintain healthy lifestyles.

County Infrastructure

The county does not have a current comprehensive cancer plan, although in 2003, the Middlesex County Public Health Department developed a broad-based community health assessment that identifies county needs, including cancer, and strategies to meet those needs.

The county has an ongoing cancer coalition comprised of cancer education and treatment providers, including representatives from the county health department, NJCEED, the county's five hospitals, the Cancer Institute of New Jersey, and the American Cancer Society (ACS), among others. These organizations, as well as other collaborative community organizations, provide leadership for cancer issues. A summary of county resources and the major organizations that serve as these resources is provided in the following table.

Summary Table of Major Middlesex County Cancer-Related Resources[6]

Organization	Information	Education	Screening	Treatment	Chemotherapy	Radiation Therapy	Clinical Trials	Hospice	Home Health	Palliation	Support	Bereavement	Childhood Cancer	Advocacy
NJCEED*	✓	✓	✓											✓
Comprehensive Cancer Center														
The Cancer Institute of New Jersey*	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓
Hospital Providers														
JFK Medical Center*	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓		✓
Raritan Bay Medical Center, Old Bridge*	✓	✓	✓	✓	✓		✓			✓	✓	✓		✓
Raritan Bay Medical Center, Perth Amboy*	✓	✓	✓	✓	✓		✓			✓	✓	✓		✓
Robert Wood Johnson University Hospital*	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓
Saint Peter's University Hospital*	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓
Health Departments														
Middlesex County Public Health Department*	✓	✓	✓											✓
Edison Department of Health and Human Services	✓	✓	✓											✓
Middlebrook Regional Health Commission	✓	✓	✓											✓
Woodbridge Township Health Department	✓	✓	✓											✓
Community Agencies/Providers														
Eric B. Chandler Health Center*	✓	✓	✓											
Jewish Renaissance Health Center*	✓	✓	✓											
Joseph S. Yewaisis Outpatient Center*	✓	✓	✓											
Planned Parenthood of Central NJ*	✓	✓	✓											
St. John's Family Health Center*	✓	✓	✓											
Radiology Centers			✓											
Hospice Agencies								✓		✓	✓	✓		
Home Health Agencies									✓	✓				
Community Organizations														
American Cancer Society*	✓	✓	✓								✓	✓		✓
* Indicates coalition member														

Prevention and Education

In Middlesex County, a vast array of cancer-related prevention and education activities are offered. These efforts are primarily spearheaded by the aforementioned coalition members.

The Middlesex County Public Health Department (MCPHD) serves 20 of the county's municipalities. Of the four remaining municipalities, three have independent health departments (Edison, Woodbridge, and South Brunswick), and Middlesex Borough is part of a regional department that includes five Somerset County municipalities. The health departments provide health screening and education services.

Although resources are widely available, access issues exist for minority and low-income populations, especially blacks and Hispanics. Lack of transportation, language, culture, and lack of awareness contribute to these problems. Key informants indicated that many blacks distrust the medical establishment and are often in denial due to significant fear of a cancer diagnosis, both of which may delay accessing preventive cancer screenings and may ultimately result in cancer diagnosis at a later disease stage than their white counterparts. Hispanics confront the same systemic barriers to cancer screening and care, but the barriers are exacerbated by language, immigration status, and stigmatization of cancer. It is believed that the county's Asian Indian residents are unaware of cancer risks and available screening services. Support groups for Asian Indians and Hispanics are either non-existent or very limited.

Transportation

Nearly all key informants identified transportation as the major barrier to receiving cancer services. While several agencies provide no-cost or low-cost assistance, a majority of these agencies has age and service area restrictions, often impeding their effectiveness, and the cost of private transportation is prohibitive.

Palliation/Quality of Life/Survivorship

Coordinated care and palliative care to enhance the quality of life for patients with cancer are not well advanced in Middlesex County. According to key informants, the county's health professionals and the general population do not know enough about palliative care. A general misconception exists that palliative care is another name for hospice care, and many do not realize its benefits. Suggested strategies for overcoming these misconceptions include increasing awareness and educating the county's healthcare professionals and the public-at-large. According to key informants, overall the county's health professionals and the general population do not know enough about palliative care.

Quality of life is improved when cancer patients and/or their families receive physical, social, psychological, and spiritual support, according to the ACS. In Middlesex County, support is offered through 27 patient and family support groups and 11 bereavement groups. According to key informants, access and effectiveness of support programs could be improved. Support programs tend to be located at the hospitals or outside minority neighborhoods. Key informants also identified a need for greater cultural sensitivity to family dynamics.

Providers and Treatment

Patient care in Middlesex County for adults with cancer is excellent, according to the majority of key informants. Middlesex County hospitals are the principal cancer treatment providers for county residents. Substantial cancer diagnostic and treatment services are available at the county's five hospitals and 11 radiology and freestanding diagnostic facilities, most of which accept government payment. Radiation oncology is performed in three hospitals located in Edison and New Brunswick. Chemotherapy is provided at all of the hospital facilities as well as in private physicians' offices. Private practice internists, surgeons, and oncology specialists are

also available countywide. Home health agencies provide nursing care and personal assistance, and five hospices are located in the county, two of which offer inpatient hospice care.

Low-income or special-need populations receive cancer screening and referrals through NJCEED, the primary care facilities, and Planned Parenthood, as well as through the health departments and hospital-based clinics. According to key informants, however, transportation may be difficult, especially for persons who reside in Perth Amboy.

Childhood Cancer

Pediatric cancer care in Middlesex County is considered excellent. The county is home to two children's hospitals located in New Brunswick. Both of these hospitals offer pediatric hematology/oncology services and treatment. In both cases, the services are provided using a holistic, multidisciplinary team approach.

Section 3 – Cancer Burden

All incidence[7] and mortality[8] rates cited herein are per 100,000 and age-adjusted to the 2000 U.S. population standard[3]. All county and state rates are average annual rates during 1996–2000. For simplicity, the 1996–2000 average annual age-adjusted incidence or mortality rate hereinafter will be abbreviated and referred to as incidence or mortality rate, respectively. The reason the five-year average has been routinely used is that the small number of cases in a single year leads to statistical variations that are not generally meaningful. For U.S. incidence rates, 1999 or 2000 rates were used. Unless otherwise specified, all rates are for invasive cancer only.

Overall Cancer Burden

Cancer is the second most common cause of death in Middlesex County and the state.[4] Approximately 26,109 Middlesex County residents are living with diagnosed cancer. During the period 1996–2000, an average of 3,656 new cancer cases were diagnosed and 1,463 cancer deaths occurred each year in Middlesex County. When compared to New Jersey, Middlesex County total cancer incidence (509.5) and mortality (207.6) rates are similar; however the actual number of cancer cases diagnosed is 4th highest among New Jersey counties, reflecting the county's population (3rd highest).

During the period 1996–2000, the average annual age-adjusted incidence rates of all cancer sites combined for males (619.1 per 100,000) and for females (442.1) in the county were both similar to the corresponding state rates (male: 628.7; female: 453.7). Within the county, incidence rates were consistently lower among county females versus males, regardless of race. Reflecting the county's racial composition, cancer occurred most often within the white population; however, black individuals were more likely to be diagnosed during later stages of cancer, which was reflected in their higher mortality rates. Of the groups for whom separate data were collected in

the county,[e] the incidence rate for all cancers combined was highest among black males (638.0 per 100,000); this rate was lower than the state incidence rate among black males (716.5). Among females in the county, Hispanic females had the lowest incidence rate for all cancers combined (383.7 per 100,000).[f] In Middlesex County, Hispanics comprised 13.5% of the population, yet accounted for only 5.2% of the new cancer cases.

County mortality due to all cancers was higher among males (260.6 per 100,000) than females (175.6), and county rates were similar to those of the state (male: 261.1; female: 181.6) and nation (male: 255.5; female: 168.3). However, the white male mortality rate per 100,000 (270.0) was the fifth highest among the state's counties, 5% higher than the corresponding state rate (256.7), and 8% higher than the national rate (249.5). Compared to the state (150.0), mortality was also higher among the county's Hispanic males (169.5).

The table below summarizes statistics of the seven NJ-CCCP priority cancers for Middlesex County.

[e] Separate data were available for whites and blacks and for those of Hispanic ethnicity. Hispanics and non-Hispanics may be of any race. Other minority groups raise special issues as well, related to culture, language, and access to care. Although there are concerns that minorities bear disproportionate portions of the cancer burden, their limited numbers lead to their omission from many sources of statistical data. Thus, precise numbers and rates are not readily available and are not portrayed explicitly.

[f] Of the groups for which separate data were collected. Hispanics and non-Hispanics may be of any race. Racial categories include both Hispanics and non-Hispanics. Data on non-Hispanics are not available. Comparisons of Hispanic rates with rates for the whole population may underestimate the difference between Hispanics and non-Hispanics because Hispanics are included in the total population. Further, the relatively small numbers of blacks and Hispanics in Middlesex County can lead to unstable calculations of rates.

Selected[a] Age-Adjusted[b] Middlesex County Cancer Statistics, 1996–2000[c]

	Estimated Prevalence[d]	Incidence per 100,000[e]	Mortality per 100,000[e]
All Cancers,[f] Middlesex County			
Male	10,483	619.1	260.6
Female	15,626	442.4	175.6
NJ-CCCP Priority Cancer by Gender			
Breast, female	6,156	137.1	30.1
Cervical, female	651	9.9	2.7
Colorectal, male	1,354	84.8	***33.1***
Colorectal, female	1,614	49.9	18.5
Lung, male	392	91.0	73.0
Lung, female	504	56.5	43.0
Melanoma, male	575	17.6	3.8
Melanoma, female	689	10.8	1.8
Oral/Oropharyngeal, male	300	14.2	3.5
Oral/Oropharyngeal, female	203	5.9	1.6
Prostate, male	4,061	182.3	33.1

[a] Based upon the NJ-CCCP.
[b] Age-adjusted to 2000 U.S. Census population standards. Age-adjustment is used to describe rates in which statistical procedures have been applied to remove the effect of differences in composition (specifically, variations in age distribution) of the various populations. This is important in order to portray an accurate picture of the burden of cancer, since cancer is known to disproportionately affect persons of differing ages.
[c] Rates are average annual rates during the time period 1996 through 2000.
[d] Prevalence is the measurement of burden of disease in the population at a particular point in time. Within this report, it represents the number of people alive who have ever been diagnosed with the disease. Prevalence figures given here are rough theoretical estimates, based on a number of assumptions, and computed by applying national prevalence-to-incidence ratios to Middlesex County's average annual crude incidence counts for the five years 1996–2000, separately for each gender. Actual prevalence is likely to be of the same order of magnitude as the estimate.[9]
[e] Incidence and mortality are gender-specific, age-adjusted annual rates, not counts. A rate at least 10% higher than the corresponding state rate is shown in bold italics.
[f] "All cancers" represents the sum of all invasive cancer during the time period, not just the seven cancers described in detail below.

Cancer Burden by Site

The burden was greatest for breast, colorectal, lung, and prostate cancers. Of the seven NJ-CCCP priority cancers, they accounted for 91% of all new cancer diagnoses and 94% of all cancer deaths in Middlesex County.

Breast Cancer

From 1996 through 2000, breast cancer was the most common type of cancer and the second leading cause of cancer deaths of the NJ-CCCP priority cancers among Middlesex County women. It is estimated that over 6,000 county women were living with diagnosed breast cancer at any point in time during the period 1996–2000. In Middlesex County, 539 new breast cancer

cases were diagnosed and 120 breast cancer deaths occurred on average each year during the period 1996–2000. The county breast cancer incidence rate per 100,000 (137.1) was ranked 12th highest among New Jersey's 21 counties and was similar to the state rate (138.5). The county breast cancer mortality rate per 100,000 (30.1) was ranked 11th highest, also similar to the state (31.3) but higher than the nation (27.7).

Similar to the state, the county's breast cancer incidence rate was higher among white women (143.2 per 100,000) than black women (116.2). Breast cancer incidence increases with age. As observed in the state, county incidence rates began increasing in women aged 40 years and older and were highest among women 75 years and older. The majority of county breast cancer deaths (60%) occurred in women 65 years and older.

In Middlesex County, nearly 65% of breast cancer cases were diagnosed at the earliest stages of cancer (*in situ* or localized), which was similar to New Jersey experience (66%). However, some disparities exist when comparing statistics by race and ethnicity. In comparison to the county's white female population (30.7%), a higher percentage of breast cancer cases were diagnosed in the more invasive stages of cancer (regional or distant) among the county's black population (34.9%). Among Hispanic women, 34.4% of cases in the county were diagnosed in the later stages, compared to 32.9% statewide.

Among 3,923 New Jersey women aged 50 and over who were interviewed from 2000 through 2002, 78% reported having had a mammogram within the past two years.[10,11] Based on interviews of 468 women in Middlesex County, the county rate did not differ significantly from the state rate.[11] The full report includes risk factors and potential opportunities to promote early detection and improve breast cancer outcomes. While breast cancer screening is available throughout the county, key informant interviews suggest that the message still needs to be disseminated more effectively to minority women.

Cervical Cancer

In Middlesex County, approximately 600 county women were living with diagnosed cervical cancer. Annually during the period 1996–2000, there were about 38 new cervical cancer cases diagnosed and 11 cervical cancer deaths in the county.

The Middlesex County cervical cancer incidence rate (9.9 per 100,000) was 9% lower than the state rate (10.9) and appeared to be declining during the 1996–2000 period (although this difference is not statistically significant). The county's white female population accounted for 83% of all new cervical cancer cases per year. Although the cervical cancer incidence rate for black women in the county (12.5 per 100,000) was lower than that for black females statewide (17.9), this rate was higher than the county-level rate for white females (10.3). In Middlesex County, black females also had a greater percentage of diagnoses occurring in the regional stage of cervical cancer (50%) than did white females (41%).[g] Hispanic females also had a high incidence rate (15.2 per 100,000), accounting for 14% of cervical cancer cases in the county.

[g] Despite the small number of cases among black females in Middlesex County, the higher percentage of cases diagnosed at the regional stage among black females than white females was statistically significant (p=.075).

The highest cervical cancer incidence rates in the county occurred among women aged 40–49 (18.2 per 100,000) and women aged 75 years and older (19.1), which were similar to the state rates (40–49 age group: 18.1; 75+ age group: 19.6). The population aged 50 years and older was least likely to be diagnosed during the localized stage of cancer.

The county mortality rate due to cervical cancer (2.7 per 100,000) was lower than the state (3.1) and national rates (3.0). Mortality rates for black and Hispanic females were suppressed due to the small number of cases.

Papanicolaou ("Pap") tests, which detect some precancerous as well cancerous lesions, are covered by most private and public health insurance. Some companies have moved to cover a more sensitive and specific screening test, the AutoPap, which uses a thin preparation of cells along with computer-assisted technology.[1] Human papillomavirus (HPV), a sexually transmitted infection, is the most significant risk factor for developing cervical cancer; recommendations for the incorporation of HPV testing[h] as part of a pelvic examination have been developed by the American College of Obstetricians and Gynecologists.[1,12]

Risk factors for cervical cancer include ever being sexually active, lack of routine screening, early onset of sexual intercourse, a history of multiple partners, a history of sexually transmitted infections (especially HPV), obesity, and smoking. Among 7,689 New Jersey women with no history of hysterectomy who were interviewed from 2000 through 2002, 83% reported having had a Pap smear within the past three years.[10,11] Based on interviews of 993 women in Middlesex County, the county rate did not differ significantly from the state rate.[11] The full report provides potential opportunities to improve cervical cancer outcomes.

Colorectal Cancer

From 1996 through 2000, colorectal cancer was the 3rd most commonly diagnosed cancer of the NJ-CCCP priority cancers in Middlesex County for men and women. It was the 2nd most common cause of cancer deaths among county men and 3rd most common among women. It is estimated that approximately 3,000 Middlesex County residents were living with diagnosed colorectal cancer at any point in time during the period 1996–2000. Although the county ranked 3rd highest among New Jersey counties in colorectal cancer incidence among men and 20th among women, the county incidence rates were only 7% higher among men and only 8% lower among women compared to the state. During the period 1996–2000, an average of 456 new colorectal cancer cases were diagnosed and 168 deaths from colorectal cancer occurred each year in the county.

The colorectal cancer incidence rate for males in the county (84.8 per 100,000) was much higher than that for females (49.9). The majority of new cases and deaths due to colorectal cancer in the county occurred in the white population; however, black females had a higher incidence rate (68.4) and mortality rate (24.8) than did white females (incidence: 50.0; mortality: 18.5).

[h] For example, the ViraPap™ will detect which strains of HPV DNA, if any, are present.

The risk of colorectal cancer increases with age, which is reflected in the county statistics. In Middlesex County, 94% of new colorectal cancer cases and 95% of the deaths occurred in county residents who were age 50 and older.

When detected in the localized stage, the five-year survival rate for colorectal cancer is more than 90%. However, only 36% of new colorectal cases among males and females in the county were diagnosed during the early stages. Among males, the county percentage was slightly lower than the state (40%) and national (44%) percentages, which was reflected in a slightly higher county mortality rate (33.1) compared to the state (29.5). Among females, the county percentage was similar to the state (37%) and lower than the national (42%) percentage, and the county mortality rate (18.5) was slightly lower than that of the state (20.1). Fewer cases among black males (28%) were diagnosed at early stages than among white males (37%). NJCEED offers colorectal diagnostic tests to a portion of this population; however, the program has seen limited participation.

Among 4,961 New Jersey adults aged 50 and over who were interviewed from 2001 through 2002, 56% reported having had colorectal cancer screening (either with a fecal occult blood test within the past year or a sigmoidoscopy or colonoscopy ever).[10,11] Based on interviews of 656 adults in Middlesex County, the county rate did not differ significantly from the state rate.[11] The full report provides risk factors and potential opportunities to improve colorectal cancer outcomes.

Lung Cancer

Lung cancer was the second most commonly diagnosed cancer and the most common cause of cancer deaths of the NJ-CCCP priority cancers among Middlesex County males and females. It occurred more often in men than women, and was responsible for nearly one-half of the county's cancer-related deaths. It is estimated that approximately 900 Middlesex County residents were living with diagnosed lung cancer at any point in time during the period 1996–2000. Nearly 506 new lung cancer cases were reported and, on average, 394 persons died from lung cancer each year during the same period.

In Middlesex County, lung cancer incidence and mortality rates were similar to state averages.[i] A significant gender difference exists in the county as well as the state; both county and state incidence and mortality rates were much higher for males than for females.

Although 91% of new cases and 93% of deaths due to lung cancer among males in the county occurred in the white population, black males in the county had a 24% higher age-adjusted incidence rate (117.0 per 100,000) than white males in the county (94.4) and a 20% higher mortality rate (91.1) than white males (76.2). Statewide, the incidence rate of lung cancer among black females (51.9 per 100,000) was lower than that of white females (57.0). However, the incidence rate among black females in the county (61.8 per 100,000) was 19% higher than the state rate and similar to rate among white females (60.0). Cases among Hispanic males and

[i] Lung cancer incidence rates (per 100,000) were 91.0 in the county and 92.5 in the state among males; and among females, 56.5 in the county and 55.4 in the state. Mortality rates were 73.0 in the county and 74.9 in the state among males; and among females, 43.0 in the county and 41.6 in the state.

females comprise 3.4% of the county's new lung cancer cases; although the incidence rates among Hispanics are low (males: 58.2; females: 41.4), the rate among females in the county is higher than among females in the state (26.8).

Like most cancers, lung cancer occurs more frequently within the older population. Incidence rates per 100,000 in Middlesex County began increasing in the 50–64 age cohort (males: 157.0; females: 116.7); rates among the 40–49 age cohort were 17.5 among males and 23.9 among females. In Middlesex County, 67% of new cases occurred in county residents who were age 65 and over, a percentage that was similar to the state average.

The major cause of lung cancer is the use of tobacco. The full report provides potential opportunities to reduce the lung cancer burden. The best way to eliminate lung cancer is to stop smoking, never smoke, and to reduce exposure to environmental tobacco smoke (ETS) or "second-hand" smoke.

Melanoma

Melanoma occurred more often in men than women during the period 1996–2000. Approximately 1,300 Middlesex County residents were living with diagnosed melanoma. It was the 4th most commonly diagnosed cancer of the NJ-CCCP priority cancers in Middlesex County for both men and women. Nearly 100 new melanoma cases and 18 deaths in Middlesex County were reported on average annually during 1996–2000. Similar to the state, nearly all county incidence and mortality occurred in the white population.

Although melanoma has been on the rise nationwide, similar trends in Middlesex County were not readily apparent. Further, county melanoma incidence rates for both males (17.6 per 100,000) and females (10.8) were lower than state rates (males: 20.1; females: 11.9).

In Middlesex County, 55% of new cases of melanoma occurred in persons under age 65, similar to the state (53.7%). County melanoma incidence rates by age for both males and females were generally similar to or lower than the corresponding state rates, with one exception: females aged 50-64 (county: 22.5; state: 19.3 per 100,000).

Similar to other cancers, the age-adjusted mortality rate due to melanoma was much higher among males in Middlesex County (3.8 per 100,000) than among females (1.8). In Middlesex County and New Jersey, most cases of melanoma were diagnosed at the *in situ* or localized stage. Only 7.6% of new Middlesex County melanoma cases were diagnosed at the regional or distant stage, similar to the statewide percentage (7.5%).

The full report provides potential opportunities to reduce melanoma outcomes. Because of the latency of melanoma, the county's nearly 178,000 youth should receive targeted education about skin protection and safety behaviors.

Oral and Oropharyngeal Cancer

It is estimated that approximately 500 Middlesex County residents were living with diagnosed oral and oropharyngeal cancer at any point in time during the period 1996–2000. During this same period, an average of 69 new oral and oropharyngeal cancer cases and 18 deaths were reported annually.

Incidence rates in Middlesex County compared favorably to state rates. County incidence rates averaged 14.2 per 100,000 males and 5.9 per 100,000 females per year over the five-year period, similar to state rates (males: 15.7 and females: 6.4). In the county, 85% of new cases and 97% of deaths occurred in the white population. The mortality rate due to oral and oropharyngeal cancer was lower among males in the county (3.5) than the state (4.2). County and state females shared the same oral cancer mortality rate (1.6).

Within the county, 45% of new oral cancer cases occurred in persons aged 65 and older. The incidence rate among county Hispanic males (15.5 per 100,000) was higher than the overall county rate for males of all races, as well as higher than the state rate for Hispanic males (12.8), although the actual number of cases is too small for definitive conclusions. Mortality rates were highest among men and women aged 65 and older.

The full C/NA report provides potential opportunities to reduce the oral and oropharyngeal cancer burden. The major risk behaviors associated with oral and oropharyngeal cancer are tobacco and heavy alcohol use.

Prostate Cancer

Among Middlesex County males, prostate cancer was the most commonly diagnosed cancer and the second leading cause of cancer deaths of the NJ-CCCP priority cancers during 1996–2000. It is estimated that approximately 4,000 Middlesex County males were living with diagnosed prostate cancer at any point in time during the period 1996–2000. During this period, an average of 555 new prostate cancer cases and 82 deaths were reported annually.

Middlesex County's incidence rate of prostate cancer (182.3 per 100,000) was slightly lower than the state rate (194.3), although mortality rates in the county (33.1) and the state (32.9) were similar. Although 88% of new cases and 90% of deaths in the county occurred among the white population, the incidence rate among black males (270.5) was 49% higher than the rate among white males (181.5), similar to the pattern seen statewide (black males: 282.9; white males: 186.4). On average, Middlesex County black males accounted for 44 new cases annually (7.9% of all new prostate cancer cases in the county). During the period 1996–2000, there was a statistically significant increase in the age-adjusted incidence rate among the county's black males of 32.9 cases per 100,000 per year, which may reflect an increase in prostate cancer screening. The county-level prostate cancer mortality rate for black males (59.1 per 100,000) was much higher than that for white males (32.9).

Prostate cancer grows slowly and may remain latent. As such, the greatest burden occurs among the population aged 65 years and over, which represented 70% of new cases. County incidence

rates were highest in the 65–74 and 75+ age cohorts (1,020.8 and 1,091.3 per 100,000, respectively), which were similar to the corresponding state rates (1,115.3 and 1,106.2, respectively).

Prostate cancer was diagnosed at the early stages in 73% of cases in the county and 72% of cases statewide. Proportionately, black males in the county (8.7%) were diagnosed at the distant stage of prostate cancer more frequently than white males in the county (4.6%) or black males statewide (7.0%).

The full report includes risk factors and potential opportunities to promote early detection and improve prostate cancer outcomes. NJCEED offers reduced-cost prostate specific antigen (PSA) tests to low-income persons throughout the county, although its ability to reach all populations in need of prostate cancer screening is limited. Between 2000 and November 2003, NJCEED provided 208 tests in Middlesex County.

Other Cancer Sites/Issues

HIV/AIDS. Human immunodeficiency virus (HIV) is the etiologic agent of the acquired immunodeficiency syndrome (AIDS) and is associated with the development of several specific cancers (such as Kaposi's sarcoma and non-Hodgkin's lymphoma, as discussed further in the NJ-CCCP).[1] HIV/AIDS disproportionately affects minorities, who account for 75% of HIV/AIDS cases in New Jersey.[13] As of June 30, 2003, there were 1,692 persons living with HIV/AIDS in Middlesex County, comprising 5.5% of the statewide total.[13] Middlesex County ranked 5th highest among all New Jersey counties in prevalence for HIV/AIDS, with communities in New Brunswick and Perth Amboy particularly affected. The Community Oncology Clinic at the Perth Amboy division of Raritan Bay Medical Center holds an HIV Oncology clinic.[2] Both healthcare providers and patients need to be cognizant of the heightened risk of developing malignancies, and primary care and infectious disease clinics should routinely screen for cancer-related conditions as part of ongoing care.

Bladder Cancer. New Jersey's bladder cancer incidence rates are higher than the nation's rates for all race and ethnic categories.[8] Mortality due to bladder cancer is higher in New Jersey men than in the nation overall. For 2003, bladder cancer is estimated to be the 6th most common cause of cancer mortality in the U.S. and the 5th most common cause of cancer in New Jersey.[14] For Middlesex County, incidence and mortality tended to resemble the statewide picture, although the mortality rate was slightly higher among county males (10.1 per 100,000) than among New Jersey males (9.4).

Section 4 – Discussion, Analysis and Recommendations

The recommendations and strategies presented in this section are evidenced-based and are linked to the NJ-CCCP. The following section addresses county issues that the data demonstrate are of highest importance.

Recommendations for County and Local Priorities

Middlesex County recommendations are based upon the premise that all county residents, regardless of their age, race, or income status, should have appropriate access to the county's cancer resources. The full report provides the NJ-CCCP goals for each of the cancer types under study, together with related objectives linked to *Healthy New Jersey 2010*. Below we present a summary of some of the most important issues identified during this process followed by recommendations to address each issue.

Issue 1 – Middlesex County has a culturally diverse population that presents language barriers and cultural issues. These barriers may hinder appropriate access to cancer-related prevention education, outreach, and other services. Nearly 14% of the county's residents are of Asian heritage, and blacks comprise 9.1% of the population. Large concentrations of minorities reside in New Brunswick and Perth Amboy, where there is also a high concentration of residents with income below poverty level. While a smaller percentage of both Edison and Woodbridge residents are living in poverty, each township contributes nearly 10% of the county's impoverished residents. To address these barriers, county organizations must:

- *Continue to improve outreach to and access for low-income individuals*, *minority populations, and other medically underserved residents,* particularly for those who do not understand or are unable to navigate the system effectively.[j] These include black, Hispanic, and other foreign-born individuals. Strategies that might be implemented to achieve this include:
  1) Assess the effectiveness of written education materials, and as appropriate, develop a library of cancer education literature that is translated into Spanish, Asian Indian languages, Chinese, Korean, and other Asian languages as well as literature for people with low reading levels. Information on all targeted cancers should be included. Messages should be culturally appropriate and available on-line. Sources of funding for these resources need to be explored.
  2) Advocate for programs that offer financial incentives for physicians to accept low-income patients and for home health agencies to accept Medicaid. Sources might include urban grants to attract dentists and practitioners to treat patients in underserved areas. Develop resource lists to enhance appropriate referrals of uninsured and low-income patients to diagnostic and treatment services.
  3) Expand culturally sensitive education and outreach to Asians, Asian Indians, blacks, and Hispanics, targeting geographic areas without current outreach services.
  4) Develop local support groups for minorities, particularly a Hispanic group conducted in Spanish and an Asian Indian group. Provide resources, including trained culturally compatible counselors, to establish and operate these groups, making them easy to access.

[j] The term medically underserved refers to individuals who lack access to primary care either because they are socioeconomically disadvantaged and may or may not live in areas with high poverty rates or because they reside in rural areas. The term also refers to individuals that reside in geographic areas where the Index of Medical Underservice (IMU) is 62 or less. The IMU is a weighted score derived from four variables: the ratio of primary medical care physicians per 1,000 population, infant mortality rate, percentage of population below the federal poverty level, and the percentage of the population aged 65 years and older.

Issue 2 – In Middlesex County, cancer incidence and mortality rates generally increase with age and specifically for breast, colorectal, lung, and prostate cancer. High incidence and mortality rates occurred, in particular, among black males (e.g., lung and prostate cancer) and black females (e.g., colorectal and lung cancer). County incidence rates that were higher than the corresponding state rates should be monitored among Hispanic males (oral cancer) and Hispanic females (cervical and lung cancer). Increasing screening rates will help identify more of these cancers at earlier stages. Cases among the county's black population are diagnosed more frequently at later stages for breast (female), colorectal (males), and prostate cancer. Below we provide potential strategies and interventions to address the needs of county residents:

- *Address the need to promote early detection and reduce cancer mortality* by expanding screening programs. Strategies that might be implemented to achieve this include the following:
  1) Evaluate and expand, as appropriate, the locations of and times for cancer screening services. Locate screening activities within local neighborhoods. Evaluate the feasibility of mobile van screening services.
  2) Promote increased utilization of cancer screening services by low-income and minority men by implementing innovative, culturally appropriate programs, such as programs similar to the Robert Wood Johnson University Hospital cancer outreach theater.
  3) Focus outreach efforts on educating the older population (65+) about Medicare-approved screening procedures.
  4) Utilize County Health Profile maps and data from the National Cancer Institute's Atlantic Region Cancer Information Service[k,15] to identify and focus outreach efforts on those in need of breast, cervical, colorectal, and prostate cancer screening and education, particularly those who are impoverished, illiterate, and/or linguistically isolated and are least likely to access screening services.[l]
  5) Encourage participation in clinical trials.
- *Address the need to promote cancer prevention programs to reduce cancer mortality* by expanding awareness and prevention programs. Strategies that might be implemented to achieve this include the following:
  1) Increase access to free and low-cost smoking cessation programs and support the development of a smoking cessation program conducted in Spanish. Evaluate the feasibility of offering Quitcenter services in locations outside New Brunswick.
  2) Utilize National Cancer Institute data to focus efforts on populations who are in need of smoking cessation.

[k] Consumer Health Profile maps of each New Jersey county were provided in June 2003 to the NJDHSS and UMDNJ and each county by the National Cancer Institute's Atlantic Region Cancer Information Service, along with ongoing technical support. (More information can be obtained from: 1-800-4-CANCER.) The data categorize the U.S. population into 62 groups based upon characteristics such as geography, demographics, lifestyle, and socioeconomic status. Within these 62 groups, 30 are classified as medically underserved.

[l] A linguistically isolated household is one in which no member 14 years old and over (1) speaks only English or (2) speaks a non-English language and speaks English "very well". In other words, all members 14 years old and over have at least some difficulty with English.

3) *Advance awareness of cancer prevention in the county* by expanding participation in cancer prevention to groups throughout the community, including schools, employers, faith-based organizations, volunteers, and the media.
   a) Draw upon the resources of faith-based organizations that are willing to assist with cancer awareness programs and will publicize local cancer screening services. General information may be provided to all faith-based organizations, and specific efforts should focus on the communities where churches and temples function as community centers and central gathering places.
   b) Support the development of community cancer prevention coalitions, emphasizing outreach in local neighborhoods. Evaluate the feasibility of developing a corps of informed volunteers who will provide one-on-one outreach in local neighborhoods.
   c) Encourage development of school health advisory councils, and continue to teach youth throughout the county about the importance of not smoking, limiting sunbathing, eating healthy foods, exercising regularly, and conducting breast-self exams for girls and testicular exams for boys.

Recommendations for Statewide Priorities

Recommendations for statewide priorities as related to the identified needs of Middlesex County are provided in the full report. Most correspond to those established in the NJ-CCCP. The report findings indicate a need for statewide programs that address the following county priorities: (1) improve access to cancer-related care for high-risk and low-income populations; (2) expand cancer early detection and education programs to foster greater participation among minorities and low-income populations; 3) promote prevention and education activities among adults and work toward eliminating racial and ethnic disparities through the provision of culturally appropriate and competent cancer-related services.

Closing Remarks

The Cancer Capacity and Needs Assessment provides a detailed baseline assessment for Middlesex County. The data, interpretations, and recommendations were developed to provide a wide array of public health and medical personnel with standardized information and detailed analyses that can help guide and focus their efforts at the county level, including such local health initiatives as the forthcoming Community Health Improvement Plans. The reports from all of the counties will collectively inform the continuing comprehensive cancer control efforts of the Office of Cancer Control and Prevention of the New Jersey Department of Health and Senior Services, the Governor's Task Force on Cancer Prevention, Early Detection and Treatment in New Jersey, and the University of Medicine and Dentistry of New Jersey.

References

[1] Task Force on Cancer Prevention, Early Detection and Treatment in New Jersey. New Jersey Comprehensive Cancer Control Plan. Report to the Governor, July 2002. i-xx, 1-287. 2002. Trenton, NJ, New Jersey Department of Health and Senior Services.

[2] Levinson DA. Draft Ocean County Report, June 2004. In: *New Jersey Statewide County-based Cancer Capacity and Needs Assessment Initiative, 2003-2004*, Editors: Stanley H. Weiss (UMDNJ) and Margaret L. Knight (NJDHSS).

[3] U.S. Census Bureau; Census 2000, http://www.factfinder.census.gov/, 2003.

[4] Center for Health Statistics, New Jersey Department of Health and Senior Services. New Jersey Health Statistics 2000, Table 39: Mortality by Detailed Cause of Death and County of Residence, New Jersey 2000; October 2002.

[5] Division of Addiction Services. New Jersey Department of Health and Senior Services [posted on the New Jersey Department of Human Services web site] Substance Abuse Overview 2002. http://www.state.nj.us/humanservices/das/overview/mid_2002.pdf, accessed 2003.

[6] Weiss SH, Knight ML. Cancer Resource Database of New Jersey (CRDNJ). 2004. Newark, NJ & Trenton, NJ, UMDNJ & NJDHSS.

[7] New Jersey State Cancer Registry, New Jersey Department of Health and Senior Services. Cancer incidence and distribution of stage at diagnosis in New Jersey by county, 1996–2000, for the New Jersey Comprehensive Cancer Control Plan county capacity/needs assessments. Personal communications to SH Weiss. August and September, 2003.

[8] National Cancer Institute and Centers for Disease Control and Prevention. State cancer profiles mortality data. (Continually updated data may be obtained from http://statecancerprofiles.cancer.gov/, a site associated with http://cancercontrolplanet.cancer.gov/ .) Underlying sources of data: Death data provided by the National Vital Statistics System public use data file. Death rates calculated by the National Cancer Institute using SEER*Stat. Death rates are age-adjusted to the 2000 U.S. standard population by 5-year age groups. Population counts for denominators are based on Census populations as modified by NCI. Surveillance, Epidemiology, and End Results (SEER) Program data are explained at www.seer.cancer.gov.

[9] Weiss SH, Klotz JB, Rosenblum DM. Estimating prevalence. Unpublished communication. 12/10/2004.

[10] Division of Adult and Community Health, National Center for Chronic Disease Prevention and Health Promotion, Centers for Disease Control and Prevention. Behavioral Risk Factor Surveillance System Online Prevalence Data, 1995–2003. http://apps.nccd.cdc.gov/brfss/index.asp.

[11] O'Dowd K. County-level New Jersey BRFSS cancer screening data. Personal communication to SH Weiss. 3/2/2004.

[12] ACOG. Revised cervical cancer screening guidelines require reeducation of women and physicians: All women should have an annual pelvic exam but not all women need annual Pap tests. http://www.acog.org/from_home/publications/press_releases/nr05-04-04-1.cfm?printerFriendly=yes . 5/4/2004.

[13] Division of HIV/AIDS Services, New Jersey Department of Health and Senior Services. New Jersey HIV/AIDS Semi-annual Newsletter. June 2003. http://www.state.nj.us/health/aids/aidsqtr.htm.

[14] American Cancer Society. Cancer facts and figures. 2003. Atlanta, Georgia, American Cancer Society, Inc.

[15] National Cancer Institute. 2001 cluster profile. Unpublished data. Consumer Health Profile maps of each New Jersey county were provided by the NCI's Atlantic Region Cancer Information Service to NJDHSS/UMDNJ and to each County Evaluator. June 2003. (More information can be obtained from 1-800-4-CANCER.)